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Bipolar Items and Attitude Predicates

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0. Introduction

This paper discusses *bipolar items* (BPIs) which share the features of *negative polarity items* (NPIs) as well as *positive polarity items* (PPIs). I will argue that both overt and covert factive emotives license BPIs. The Dutch *ooit* 'ever,' Serbo-Croatian *i*-series 'and/even,' and Hungarian *is*-series 'and/even' are anti-licensed by clausemate negation and licensed by extra-clausal negation (van der Wouden 1997, Progovac 1994, Szabolcsi 2002) or non-monotonic negative (and positive, for Serbo-Croatian) emotives. I maintain that the Japanese sentence focus *mo* 'also/even,' Korean wide-scope *to* 'also/even,' and Chinese *ye* 'also' in simple sentences are BPIs licensed by covert emotives. BPIs check their bipolar features with weak or medium negation but cannot check them with strong negation. Adding an NPI rescues BPIs in uncomfortable clausemate negation.

1. Bipolar Items

Two kinds of polarity items have been widely discussed so far: negative polarity items (NPIs) and positive polarity items (PPIs). This article focuses on another kind of rarely discussed polarity items, which van der Wouden (1997) called *bipolar items* (BPIs). These items show NPI and PPI features.

It is well known that NPIs are licensed in the scope of downward entailing (DE) environments (Fauconnier 1975a, Fauconnier 1975b, Ladusaw 1979).[1] For example, in (1a), the NPI *budge an inch* is licensed by *not*, which is strongly negative, because the omission of *not* makes it ungrammatical (1b). On the contrary, in (2), PPIs such as *already* are anti-licensed in a negative environment (Baker 1970).

[1] For example, the NPI *any* is licensed in the scope of the downward entailing operator *no fisherman*. *No* itself is also a downward entailing operator:

(i) a. No fisherman caught any fish. |= No fisherman caught any sillaginoid.
b. No fisherman caught any sillaginoid. |≠ No fisherman caught any fish.
(ii) a. No fisherman caught fish. |= No Sunday fisherman caught fish.
b. No Sunday fisherman caught fish. |≠ No fisherman caught fish.

(1) a. John did not budge an inch.
b. *John budged an inch.
(2) a. Simon has already arrived.
b. *Simon has not already arrived.

With respect to BPIs, the Dutch *ooit* 'ever,' Serbo-Croatian *i*-series 'also/even,' and Hungarian *is*-series 'and/even' demonstrate NPI-hood by being licensed in medium and weak negative environments but demonstrate PPI-hood when anti-licensed by strong clausemate negation (Szabolcsi p.c., van der Wouden 1997, Progovac 1994, Szabolcsi 2002).[2]

The Dutch *ooit* 'ever' requires weak or medium negativity but dislikes anti-morphic environments in (3). *Ooit* is licensed by extra-clausal negation in (4).[3]

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[2] The classification of negative environments as strong, medium and weak originates in Zwarts (1996, 1997). Anti-morphic determiners or noun phrases are strongly negative, anti-additive or anti-multiplicative expressions are medium negative, and monotone decreasing scope is weakly negative. Anti-morphism is De Morgan negation, which is a combination of anti-additivity and anti-multiplicativity.

(iii) Monotone decreasingness:
Let B be a Boolean algebra. A quantifier Q on B is said to be monotone decreasing iff for each two elements X and Y of the algebra B: if $X \in Q$ and $Y \subseteq X$, then $Y \in Q$.
(iv) Anti-additivity:
Let B and B* be two Boolean algebras. A function f from B to B* is said to be anti-additive iff for each two elements X and Y of the algebra B: $f(X \cup Y)=f(X) \cap f(Y)$
(v) Anti-multiplicativity:
Let B and B* be two Boolean algebras. A function f from B to B* is said to be antimultiplicative iff for each two elements X and Y of the algebra B: $f(X \cap Y)=f(X) \cup f(Y)$
(Zwarts 1996)

[3] Hoeksema (1998) discusses the current loss of polarity sensitivity of *ooit*. According to his observations, *ooit* has become ambiguous between the NPI *ooit* and the non-sensitive *ooit,* which is also used as an existential temporal adverb, nowadays. The latter appears in non-negative contexts.

(vi) a. Jan heeft het ooit geweten.
Jan has it once known
'Jan once knew it.'
b. Hier stond ooit een molen.
here stood once a mill
'A mill stood here, once.'

Jack Hoeksema also pointed out, at the Swarthmore Workshop on Negation and Polarity in 2006, that it is the Blocking Effect (Aronoff 1976) that makes *ooit* ungrammatical in a strong negative context. The presence of another lexical item *nooit* blocks *ooit* from a strong negative context. However, van der Wouden (1997) argues that *ooit* also dislikes anti-morphic operators other than *niet*:

(vii) a. *Een van de kinderen gaat allesbehalve ooit bij oma op bezoek.
One of the children goes anything-but ever with granny on visit
b. *Een van de kinderen gaat allerminst ooit bij oma op bezoek.
One of the children goes not at all ever with granny on visit

(3) a. **Geen** van de kinderen gaat **ooit** bij oma op bezoek.
none of the children goes ever with granny on visit
'None of the children ever visits granny.'
(Anti-additive)

b. **Weinig** kinderen gaan **ooit** bij oma op bezoek.
few children go ever with granny on visit
'Few children ever visit granny.'
(Monotone decreasing)

c. *Een van de kinderen gaat **niet ooit** bij oma op bezoek.
one of the children goes not ever with granny on visit
(Anti-morphic; van der Wouden 1997:132–133)

(4) Het is **niet** zo dat een van de kinderen **ooit** bij oma op bezoek gaat.
it is not so that one of the children ever with granny on visit goes
'It is not the case that one of the children ever visits granny.'
(van der Wouden 1997:133)

Similarly, the Hungarian *is*-series and Serbo-Croatian *i*-NPIs are ungrammatical with clausemate anti-morphic negation (5a) but grammatical in monotone decreasing contexts (5b) or with extra-clausal negation (5c).

(5) a. ***Nem** értettél valamit **is**.
not understood-you something also/even
'You didn't understand anything.'
(Hungarian, anti-morphic)

b. **Kevés** ember értett valamit **is**.
few people understood something also/even
'Few people understood anything.'
(Monotone decreasing)

c. **Nem** hiszem, hogy valamit **is** értettél.
not think-I that something also/even understood-you
'I don't think that you understood anything.'
(Extra-clausal anti-morphic, Szabolcsi p.c.)

Thus, BPIs dislike clausemate negation and demand either weak or medium negative contexts or extra-clausal negation.

2. Non-Monotonic Emotives as BPI Licensers

Licensers of BPIs are not limited to extra-clausal negation or clausemate medium or weak negation: negative emotives license BPIs in (6). The Serbo-Croatian data in (7) indicates that not only negative but also positive attitude predicates license BPIs.

(6) a. Ik **betreur** (het) dat ik dat **ooit** gedaen heb.
I regret it that I that ever done have
'I regret of what I have ever done.'
(Dutch, den Dikken p.c.)

b. **Sajnálom**, hogy valamit **is** adtam neki.
regret-I that something-ACC also/even gave-I to-him
'I regret that I gave him anything.'
(Hungarian, Szabolcsi p.c.)

(7) a. **Sumnja**-m da Milan voli **i(t)ko-ga**/***ni(t)ko-ga**.
doubt-1SG that Milan loves anyone-ACC / no-one-ACC
'I doubt that Milan loves anyone.'
(Progovac 1994:64)

b. **Sretan** sam da Milan **i(t)ko-ga** voli.
happy be.1SG that Milan anyone-ACC loves
'I am happy that Milan loves anyone.'

The monotonicity of emotives such as *doubt*, *be happy*, *be surprised*, and *regret* has posed a problem in Fauconnier-Ladusaw's DE analysis of NPI licensing contexts, because these attitude predicates are not straightforward DE (Asher 1987, Heim 1992, von Fintel 1999). For instance, *I am happy that Mary bought a car* does not imply *I am happy that Mary bought a Honda*, since the car Mary bought could be a Toyota. Similarly, the latter does not imply the former, for the speaker could be happy about the Honda and not necessarily glad that Mary spent money on a new car.

(8) I am happy that Mary bought a car. <=/=>
I am happy that Mary bought a Honda.

Without additional devices such as weakened DE (Asher 1987) or Strawson DEness (von Fintel 1999), attitude predicates are non-monotonic. Both weakened DE and Strawson Entailment add additional assumptions such that the complement clause of the conclusion is also believed.

(9) I am happy that Mary bought a car.
Mary bought a Honda.

∴ I am happy that Mary bought a Honda

Thus far, we have seen that BPIs dislike clausemate negation and demand weak or medium negative contexts, extra-clausal negation, or superordinate emotives. While Dutch and Hungarian BPIs are only licensed by negative emotives, Serbo-Croatian BPIs can be licensed by positive emotives. Considering the

attitude predicates to be non-monotonic, BPI licensing contexts range from nonmonotonic to monotone decreasing and anti-additive environments.

3. Implicit Non-Monotonic Emotives License BPIs

This section argues that not only overt emotives such as *regret* or *be sorry* but also covert emotives license BPIs. The Japanese *mo* 'also/even,' Korean *to* 'also/even' and Mandarin *ye* 'also' behave as BPIs when anti-licensed by clause-mate negation or licensed in monotone decreasing contexts. Crucially, these BPIs can be licensed by implicit speaker attitudes.

3.1. Sentence Focus *mo* 'also/even' in Japanese

The Japanese additive *mo* 'also/even' usually requires an explicit antecedent, as does the English additive *also/too*; for example, *John* is the antecedent of *Mary* in *John came, and Mary came too* (see (10) for the same example in Japanese). 'Even' appears when *mo* 'also/even' attaches to a noun phrase that refers to a scalar endpoint; for instance, in (11), *John* is the least likely person to come.

(10) John-ga ki-te, Mary-**mo** ki-ta.
John-NOM come-and Mary-also come-PAST
'John came and so did Mary.'

(11) JOHN-**mo** ki-ta.
John-even come-PAST
'(Surprisingly,), even John came.'

When *mo* attaches to *wh*-words, it forms *any*-type strong NPIs (Kato 1985, Nam 1994, Kato 2000) or negative concord items (Watanabe 2004).[4]

There is a third kind of *mo* 'also/even,' which has, so far, not been discussed much. Numata (2000) claims that this *mo* 'also/even' takes a wide scope over a proposition and triggers presupposed implicit events. I characterize it as a *discourse initial mo* or a *propositional attitude mo*, which can appear discourse initially, out of the blue, and does not require a discourse antecedent. Instead, this *mo* requires certain speaker attitudes:

(12) a. Yo-**mo** fukete-ki-ta. Mo neru-to shi-yo.[5]
night-also late-become-PAST already sleep-COMP do-will
'It's become late (at night). It's time to go to bed.'
b. Shikuramen-**mo** karete-ki-ta. Mo haru-da.
cyclamen-also wither-come-past now spring-be
'The cyclamens have withered. Spring is already here.'

[4] Japanese grammarians have considered *mo* polysemous (Sadanobu 1997).
[5] Modified from Sadanobu (1997). I am grateful to Norihiro Ogata for suggesting this example.

c. Ko-no saifu-**mo** furuku-nat-ta.
this-GEN wallet-also old-become-PAST
'This wallet has become old.'
d. Mari-**mo** kashiko-i.
Mari-also smart-be
'Mary is indeed smart.'
e. Soto-**mo** hiete-ki-ta.
outside-also cold-ASP-PAST
'It has become cold outside.'
f. Tabi-**mo** owari-ni chikazuite-ki-ta.
trip-also end-to approach-ASP-PAST
'The trip is coming to an end.'
g. Omae-**mo** aho-ya-na.
you-also silly-be-EXC
'You are indeed silly.'

This *mo* has *sentence-focus structures* in the sense of Lambrecht (1994). As an answer to the question *what happened*, the entire proposition *my car broke down* is new information and is therefore focused on.

(13) a. What happened?
My CAR broke down.
b. Presupposition: _
c. Assertion: 'speaker's car broke down'
d. Focus domain: 'speaker's car broke down'
e. Focus: S

(Lambrecht 1994:233)

The discourse-initial *mo* is a BPI which shows PPI-hood when anti-licensed by clausemate negation, as in (14a) and (15a). Moreover, extra-clausal strong negation, (14b) and (15b); monotone decreasing numeral, *at most n* (16); and nonmonotonic emotives can be its licensers (17).

(14) a. *Yo-**mo** sue-ja-**nai**.
world-also end-be-NEG
'This is not the end of the world.'
b. Yo-**mo** sue-da-to-iu-koto-wa-**nai**.
world-also end-be-COMP-say-fact-TOP-NEG
'It is not true that this is the end of the world.'

(15) a. *Tabi-**mo** owari-ni chikazuite-ko-**nai**.
trip-also end-DAT approach-ASP-NEG
'The trip is not drawing to an end.'

b. Tabi-**mo** owari-ni chikazuite-ki-ta wake demo-**nai**.
trip-also end-DAT approach-ASP-PAST reason be-NEG
'It is not that the trip is drawing to an end.'

(16) **Seizei** **5**-nin-no gakusei-**mo** tsukare-ta.
at most 5-CL-GEN student-also tired-PAST
'At most five students grew tired.'

(17) a. Yo-**mo** fukete-ki-te **zannen-da**.
night-also late-become-PAST.and regretful-be
'I am sorry that it got late (at night).'
b. Shikuramen-**mo** karete-ki-te **kanashii**.
cyclamen-also wither-come-PAST.and sad
'I am sad the cyclamens have withered.'

Even though the typical *mo*-sentences of this sort are simple declarative sentences, the speaker's sentimental emotions, either negative or positive, is indispensable:

(18) a. (Zannenna-koto-ni) yo-**mo** fukete-ki-ta.
regretful-fact-GOAL night-also late-become-PAST
'(I am sorry that) it's become late (at night).'
b. (Shimijimi-to) Ko-no saifu-**mo** furuku-nat-ta.
heartily-COMP this-GEN wallet-also old-become PAST
'(Heartily) This wallet has become old.'

(19) (Ureshii-koto-ni) haru-**mo** takenawa-ni nari-mashi-ta.[6]
(happy-fact-GOAL) spring-also peak-GOAL become-HON-PAST
'(I'm glad that) spring has reached its peak.'

Therefore, the BPI licensing environments in Japanese are: (i) downward entailing scope, (ii) extra-clausal antimorphic negation, (iii) extra-clausal non-monotonic emotives, and (iv) covert superordinate emotives. Covert superordinate emotives are peculiar to Japanese as well as to Korean and Chinese BPIs.

3.2. Korean *to* 'also/even'

The Korean *to* 'also/even' follows the same pattern as the Japanese BPI *mo*. The sentence focus *to* 'also/even' is triggered by implicit emotions such as *be sad* or *regret* when anti-licensed by clausemate negation.[7]

(20) a. Pom-**to** wat-ta.
spring-also come-PAST
'Spring has come.' (That's why I'm so sad.)

[6] The body of this sentence is taken from Numata (2000), even though Numata does not discuss speaker attitudes toward the propositions.
[7] My thanks to Hejeong Ko for providing the Korean examples.

b. #Pom-**to** ogi **anat**-ta.
spring-also come NEG-PAST
'Spring has not come.' (That's why I'm so sad.)

3.3. Chinese *ye* 'also'

Sentence focus *ye* 'also' in Mandarin Chinese is also a BPI, for it is licensed by speaker feelings, as in (21a); however, clausemate negation interferes with it in (21b).[8] Clausemate negation does not interfere with *ye* 'also' as shown in (21c):

(21) a. Qiutian **ye** lai-le.
fall also come-PERF
(In view of the foregoing events) 'Fall has come.'
b. #Qiutian **ye** **bu** lai-le.
fall also NEG come-PERF
'Fall is not here.'
c. Lingling bu lai-le. Shu **ye** **bu** lai-le.
Lingling NEG come-PERF Shu also NEG come-PERF
'Lingling did not come. Neither did Shu.'

The monotone decreasing operator *at most* licenses the BPI *ye* 'also' in (22), as do non-monotonic emotives in (23).

(22) Zhangsan **zuiduo** **ye** zhi neng he san bei jiu.
Zhangsan at most also only can drink three glass liquor
'Zhangsan can drink three glasses of liquor at the most (it's a pity).'

(23) a. **Keqi** qiutian **ye** likai-le.
sorry fall also leave-PERF
'I'm sorry that fall is over.'
b. **Xinhao** qiutian **ye** likai-le.[9]
glad fall also leave-PERF
'I'm glad that fall is over.'

4. Modal-like Elements or an NPI Rescues BPIs with Negation

The insertion of an NPI rescues BPIs in otherwise uncomfortable anti-morphic environments, as in (24).[10] Moreover, (25) indicates that the presence of a modal-like element also rescues otherwise uncomfortable BPIs under negation.[11]

[8] I owe most of the following Mandarin examples to Chih-hsiang Shu.
[9] My thanks to Pei Jung Lee for the judgment.
[10] I thank Heejeong Ko for bringing this to my attention.
[11] Thanks to Hiroshi Mito for suggesting example (25).

(24) Ko-no saifu-**mo** #(zenzen/amari) tsukawa-**nakat**-ta.
this-GEN wallet-also at all/much use-NEG-PAST
'I have not used this wallet at all/much.'

(25) a. Kare-**mo** kekkon-seikatsu-**mo** **umaku** **ika-nakat**-ta-ne.
he-also marriage-life-also well go-NEG-PAST-PAR
'His married life did not go well, did it?'
b. Kono hon-**mo** yoku **wakara-nakat**-ta-ne.
this book-also well can.understand-NEG-PAST-PAR
'This book was also hard to understand, wasn't it?'
c. Ano baito-**mo** **tsukae-nakat**-ta.
that part-time-worker-also can.use-NEG-PAST
'That part-time worker was not usable, either.'

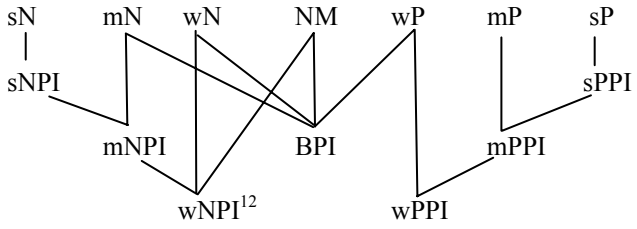
(24) seems to suggest that the negation that anti-licenses the BPI licenses the NPI *zenzen/amari*, so that it no longer anti-licenses the BPI. In (25), the presence of non-monotonic modal-like elements licenses the illegitimate clausemate BPI.

5. BPI Licensing Contexts

BPI licensers are either monotone decreasing, anti-additive, extra-clausal anti-morphic negation, or non-monotonic explicit/implicit emotives; therefore, BPI licensing contexts can be summarized as in (26). The distribution of polarity items including the BPIs coincides with the feature inheritance hierarchy, which is not bound (cf. Carpenter 1992) in (27).

(26) a. [MD...BPI...]
b. [AA...BPI...] (Dutch)
c. $NEG_{antimorphic}[_{CP}...BPI...]$
d. *$[NEG_{antimorphic}...BPI...]$
e. $PRED_{emotive}$ $[_{CP}...BPI...]$
f. ± $(PRED_{emotive})[_{CP}...BPI...]$ (Japanese, Korean, Chinese)
g. ± $PRED_{emotive}[_{CP}...BPI...]$
(Serbo-Croatian, Japanese, Korean, Chinese)
h. −$PRED_{emotive}[_{CP}...BPI...]$ (Dutch, Hungarian)
(MD: monotone decreasing, AA: anti-additive, PRED: predicate, +: positive, −: negative, ( ): implicit)

(27)



[12] Weak NPIs such as *any* and *ever* can appear in non-monotonic scope (Nishiguchi 2003, 2004).

The distributions of BPIs can be explained by the feature checking mechanism. As Bernardi (2002) incorporates NPI licensing relations and monotonic properties into a lexical entry in Categorial Type Logic, the BPI is assigned the feature [mN⊓wN⊓NM⊓wP], which is the meet of medium negative (mN), weak negative (wN), nonmonotone (NM), and weak positive (wP) in the notation of combinatory categorial grammar (Steedman 2000, among others). The BPI feature can be checked in the wN, NM, or medium negative [wN⊓mN] context; for example, a Hungarian monotone decreasing determiner *kevés* 'few' returns a quantifier that selects VP with the BPI feature, as shown in (29). However, the BPI feature cannot be checked with the strong negative [sN⊓mN⊓wN].[13]

(28) Lexical entry:

BPI	NP-*also*: $S_{[mN⊓wN⊓NM⊓wP]}/(NP\S)$; *anything*: $((NP\S)/NP)\(NP\S_{[mN⊓wN⊓NM⊓wP]})$
non-monotonic emotive	*regret*: $(NP\S)/S_{[mN⊓wN⊓NM⊓wP]}$
weak negation	*few*: $(S/(NP\S_{wN}))/NP$
medium negation	*none*: $(S/(NP\S_{mN⊓wN}))/NP$
strong negation	*not*: $(NP\S_{sN⊓mN⊓wN})/(NP\S)$

(29)

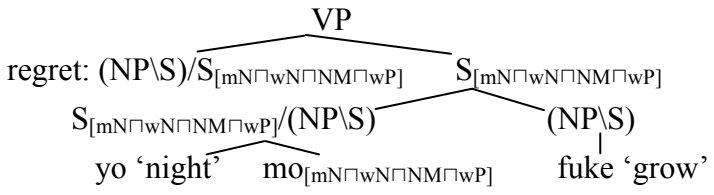
Kevés	ember	értett	valamit is
'few'	'people'	'understood'	'anything'
: $(S/(NP\S_{wN}))/NP$	: NP	: $(NP\S)/NP$	:$((NP\S)/NP)\(NP\S_{[mN⊓wN⊓NM⊓wP]})$

Laka (1994) assumes that negative predicates such as *deny* and *doubt* select a negative complementizer with [+neg], which licenses NPIs in embedded clauses.

(30) a. The witnesses denied that anybody left the room before dinner.
b. *The witnesses denied anything.
c. [$_{TP}$The witnesses[$_{T0}$[T[$_{VP}$deny$_{[uNeg]}$ [$_{CP}$[$_{C[Neg]}$ that [$_{TP}$ anything...]]]]]

Applying Laka's theory, we assume that emotives select S with the BPI feature in (31).

(31)

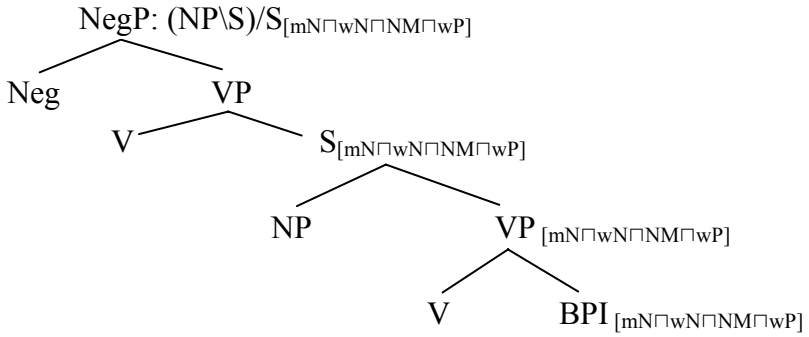


The BPI returns S with the [mN⊓wN⊓NM⊓wP] feature when composing with the predicate. Then, the S with the BPI feature combines with non-monotonic

[13] My thanks to Raffaella Bernardi for the discussion.

emotives that select S with the BPI feature. On the other hand, the negative predicate in the matrix clause also selects S with the BPI feature, as in (32).

(32)



6. Conclusion

This article discussed BPIs which share the features of both NPIs and PPIs. As NPIs, BPIs are licensed in anti-additive or monotone decreasing contexts. As PPIs, BPIs are ungrammatical with clausemate negation. BPIs are licensed by extra-clausal explicit or implicit non-monotonic factive emotives as well as superordinate negation. Adding an NPI rescues BPIs in clausemate negation.

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